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25944	7590	06/09/2006	EXAMINER WANG, JIN CHENG	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			ART UNIT 2628	PAPER NUMBER

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/648,368	MOMOZONO ET AL.	
	Examiner	Art Unit	
	Jin-Cheng Wang	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Applicant's submission filed on 5/4/2006 has been entered. Claims 1, and 9-10 have been amended. Claims 11-12 have been newly added. Claims 1-12 are pending in the application.

Response to Arguments

Applicant's arguments filed May 4, 2006 have been fully considered but are moot in view of the new ground(s) of rejection of the amended claim 1.

Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

For example, the base claim 1 recites "a subpixel-font generating device that analyzes an area of the font data to identify whether the area includes a pixel located diagonal to a target pixel, the subpixel-font generating device: solely when the area includes a pixel located diagonal to the target pixel, shifting the target pixel by at least one subpixel to generate a shifted target pixel and then expanding the shifted target pixel into subpixel fonts; and when the area includes no pixel located diagonal to the target pixel, avoiding a shift in the target pixel before expanding the target pixel into subpixel fonts" is not described in the specification in such a way to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

For example, applicant's disclosure of Patterns 1a, 1b, Pattern 2, Pattern 3a, 3b, 4a and 4b in Figs. 4-5 are a matrix of 3 by 3 pixels. The area of 3 by 3 pixels has a target pixel, e.g., the center pixel of the area. The area thus always has a pixel located diagonal to the target pixel. However, the base claim set forth the claim limitation of shifting the target pixel solely when the area includes a pixel located diagonal to the target pixel, and not shifting when the area includes no pixel located diagonal to the target pixel. There is always a pixel in the area located diagonal to the target pixel. Applicant's claim limitation of "a pixel in the area located diagonal to the target pixel" may be a pixel constituting a character (■), as opposed to a pixel constituting a character (Δ or □). Moreover, applicant speculates shifting the target pixel by more than one subpixel because applicant's specification only describes shifting the target pixel by just one subpixel, rather than "at least one subpixel" which may be more than one pixel. Therefore, the metes and bounds of the coverage of at least base claim 1 cannot be ascertained.

To comply with the "written description" requirement of 35 U.S.C. 112, first paragraph, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the "written description" inquiry, whatever is now claimed. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991). For purposes of written description, one shows "possession" by descriptive means such as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention. *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997). Such descriptive means cannot be found in the disclosure for the inventions of the base claim 1.

In view of the new claim limitation set forth in the base claim 1, Toji et al. U.S. Patent Application Publication 2003/0020729 (hereinafter Toji) teaches the claim limitation “solely when the area includes a pixel located diagonal to the target pixel, shifting the target pixel by at least one subpixel to generate a shifted target pixel and then expanding the shifted target pixel into subpixel fonts; and when the area includes no pixel located diagonal to the target pixel, avoiding a shift in the target pixel before expanding the target pixel into subpixel fonts”.

This is because Toji teaches no shifting in Fig. 7(a) and shifting in Fig. 7(c) or 7(f). See also Fig. 14(a) and Fig. 15 wherein shifting occurs for a center target pixel in the second row, and no shifting occurs for a center target pixel in the first row, fourth row. No shifting occurs also for the target pixel located in the second position of the fourth row and the fourth position of the fourth row (Fig. 14(a) and 15). Toji discloses in Fig. 25(c) and 25(d) shifting the target pixel rightward a subpixel and no shifting for the target pixel in Fig. 25(c). Toji discloses in Fig. 11(a) shifting the target pixel leftward or rightward by two subpixels. Toji also discloses the gradation adjustment for the pixels (See Toji Paragraph 0012-0014)

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

For example, the base claim 1 recites “a subpixel-font generating device that analyzes an area of the font data to identify whether the area includes a pixel located diagonal to a target pixel, the subpixel-font generating device: solely when the area includes a pixel located diagonal to the target pixel, shifting the target pixel by at least one subpixel to generate a shifted target pixel and then expanding the shifted target pixel into subpixel fonts; and when the area includes no pixel located diagonal to the target pixel, avoiding a shift in the target pixel before expanding the target pixel into subpixel fonts” is not described in the specification in such a way to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

For example, applicant’s disclosure of Patterns 1a, 1b, Pattern 2, Pattern 3a, 3b, 4a and 4b in Figs. 4-5 are a matrix of 3 by 3 pixels. The area of 3 by 3 pixels has a target pixel, e.g., the center pixel of the area. The area thus always has a pixel located diagonal to the target pixel. However, the base claim set forth the claim limitation of shifting the target pixel solely when the area includes a pixel located diagonal to the target pixel, and not shifting when the area includes no pixel located diagonal to the target pixel. There is always a pixel in the area located diagonal to the target pixel. Applicant’s claim limitation of “a pixel in the area located diagonal to the target pixel” may be a pixel constituting a character (■), as opposed to a pixel constituting a character (Δ or □). Moreover, applicant speculates shifting the target pixel by more than one subpixel because applicant’s specification only describes shifting the target pixel by just one

subpixel, rather than “at least one subpixel” which may be more than one pixel. Therefore, the metes and bounds of the coverage of at least base claim 1 cannot be ascertained.

To comply with the “written description” requirement of 35 U.S.C. 112, first paragraph, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the “written description” inquiry, whatever is now claimed. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991). For purposes of written description, one shows “possession” by descriptive means such as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention. *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997). Such descriptive means cannot be found in the disclosure for the inventions of the base claim 1.

Claims 2-8 depend upon the claim 1 and are rejected due to their dependency on the claim 1.

The base claim 9 recites the limitation “solely when the area includes a pixel located diagonal to the target pixel, shifting the target pixel by at least one subpixel to generate a shifted target pixel and then expanding the shifted target pixel into subpixel fonts; and when the area includes no pixel located diagonal to the target pixel, avoiding a shift in the target pixel before expanding the target pixel into subpixel fonts” is not described in the specification in such a way to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claim 9 is subject to the same rationale of rejection set forth in the claim 1.

The base claim 10 recites the limitation “solely when the area includes a pixel located diagonal to the target pixel, shifting the target pixel by at least one subpixel to generate a shifted target pixel and then expanding the shifted target pixel into subpixel fonts; and when the area includes no pixel located diagonal to the target pixel, avoiding a shift in the target pixel before expanding the target pixel into subpixel fonts” is not described in the specification in such a way to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claim 10 is subject to the same rationale of rejection set forth in the claim 1.

For example, the base claim 11 recites “when a pixel constituting the font data is located at a position that, with respect to a first direction, is diagonal to a target pixel, shifts the sub-pixels of the target pixel in the first direction by at least one sub-pixel distance; and when a pixel constituting the font data is located at a position that, with respect to a second direction opposite to the first direction, is diagonal to the target pixel, shifts the subpixels of the target pixel in the second direction by at least one subpixel distance.” The above claim limitation set forth in the claim 11 is not described in the specification in such a way to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant speculates shifting the target pixel by more than one subpixel because applicant’s specification only describes shifting the target pixel by exactly one subpixel, rather than “at least one subpixel” which may be more than one pixel. Therefore, the metes and bounds of the coverage of at least base claim 1 cannot be ascertained.

The claim 12 is subject to the same rationale of rejection set forth in the claims 1 and 11.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For example, the base claim 1 recites “a pixel located diagonal to a target pixel”. Applicant’s claim limitation of “a pixel in the area located diagonal to the target pixel” may be a pixel constituting a character (■), as opposed to a pixel constituting a character (Δ or □). Clarification is required.

Claims 2-8 depend upon the claim 1 and are rejected due to their dependency on the claim 1.

The claim 9 is subject to the same rationale of rejection set forth in the claim 1.

The claim 10 is subject to the same rationale of rejection set forth in the claim 1.

For example, the base claim 12 recites “a pixel is located at a third position that is adjacent and diagonal to the target pixel”.

Applicant's claim limitation of "a pixel is located at a third position that is adjacent and diagonal to the target pixel" may be a pixel constituting a character (■), as opposed to a pixel constituting a character (Δ or □). Clarification is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama et al. U.S. Patent No. 6,542,161 (hereinafter Koyama) in view of Okada et al. U.S. Patent No. 6,914,615 (hereinafter Okada) and Toji et al. U.S. Patent Application Publication 2003/0020729 (hereinafter Toji).

Re Claims 1, 9 and 10:

Koyama teaches a font processor, comprising:

A data acquiring device (e.g., Fig. 15A-15E) that acquires font data of bitmap fonts (*the display device 10 acquires font data as defined on a sub-pixel by sub-pixel basis; see column 11-12 and in particular see column 20, lines 45-54 for the character code being input to the display device having the character size represented as 20 dots by 20 dots; see also Fig. 29A wherein the line width of the character may be input from the input device 30 to the control section 20 and a straight line or curve may be generated according to the input line width information of the*

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character, defining the sub-pixels along the straight line or curve as corresponding to the basic portion of the character);

A subpixel-font generating device (e.g., Fig. 15A-15E) that analyzes an area of the font data by pattern correction to generate subpixel fonts that have data in subpixels, the pattern matching identifying whether the area corresponds to one of patterns including a horizontal, vertical, or diagonal line of pixels (*e.g., the subpixel font generating is performed in the character display program along with a plurality of pattern fonts stored in the storage apparatus 40. The “pattern correction” can be done through controlling the color element level of each subpixel; see column 12, lines 10-62; and the sub-pixel arrangement is discussed in column 13, lines 15-27; Moreover, the skeleton shape of a character as defined in 42d, the correction table 42e and the brightness table 42c of the auxiliary storage apparatus 40 which collectively stores the correction patterns of fonts; see column 19, lines 38-55; see also column 21, lines 33-42, column 29, lines 22-67, column 30, lines 1-57, column 31, lines 11-40 and Figs. 52A-67A in which the cited reference discloses the color element level of each sub-pixel arranged in the vicinity of a sub-pixel corresponding to the basic portion of the character set to one of level 6 to level 0 according to a predetermined correction pattern selection rule and auxiliary pattern selection rule and the setting of the color element level may be performed using the correction table 42e stored in the auxiliary storage apparatus; see column 22, lines 44-61 and column 24, lines 11-38 for the selection of the correction font patterns. Therefore, the cited reference discloses using the correction font patterns table to match for a correction font pattern to be used for the bitmap font wherein the correction font pattern identifies a horizontal line, a*

vertical line or diagonal line of pixels or sub-pixels having a gradation level 3 for example, see Figs. 3, 12, 19-26);

A gradation controlling device (e.g., Figs. 15A-15E) that controls gradation levels of the subpixels constituting subpixel fonts (*The character display program along with a plurality of pattern fonts stored in the storage apparatus 40 and when executed by the CPU 21, the character font is generated by correcting the color element level of each subpixel and the brightness level of each sub-pixel is transferred to the display device 10; Figs. 52A-67A and the corresponding disclosure regarding these figures. Therefore, the cited reference discloses using the correction font patterns table to match for a correction font pattern to be used for the bitmap font wherein the correction font pattern identifies a horizontal line, a vertical line or diagonal line of pixels or sub-pixels having a gradation level 3 for example, see Figs. 3, 12, 19-26).*

Koyama does not expressly disclose the term “solely when the area includes a pixel located diagonal to the target pixel, shifting the target pixel by at least one subpixel to generate a shifted target pixel and then expanding the shifted target pixel into subpixel fonts; and when the area includes no pixel located diagonal to the target pixel, avoiding a shift in the target pixel before expanding the target pixel into subpixel fonts”.

With regards to the new claim limitation of “when the area includes a pixel located diagonal to the target pixel, shifting the target pixel by at least one subpixel to generate a shifted target pixel and then expanding the shifted target pixel into subpixel fonts; and when the area includes no pixel located diagonal to the target pixel, avoiding a shift in the target pixel before expanding the target pixel into subpixel fonts”, Koyama discloses adjusting the intervals between

the characters on a sub-pixel by sub-pixel basis (column 11, lines 52-64). Koyama discloses **pattern correction** using a plurality of patterns including the auxiliary patterns according to the font typefaces and sizes (*see e.g., Figs. 55-56 wherein a plurality of patterns are disclosed with each attribute table with respect to the character size and typeface or stroke*) wherein the pattern correction requires that the target pixel be shifted (See Fig 6 versus Fig. 7). It would have been obvious to have modified Koyama's pattern matching of finding the correct pattern with respect to the particular font typeface and size wherein the correct pattern is the pattern having a diagonal line of pixels according to the font typefaces wherein the pattern correction decides shifting or not shifting.

Koyama discloses using the correction font patterns table to match for a correction font pattern to be used for the bitmap font wherein the correction font pattern identifies a horizontal line, a vertical line or diagonal line of pixels or sub-pixels having a gradation level 3 wherein at least one of the patterns or typefaces includes a horizontal, vertical, or diagonal line of pixels (Figs. 3, 12, 19-26).

It would have been obvious to have modified Koyama's shifting of the subpixel positions or changing the character intervals by shifting the subpixel positions according to the font typeface including a diagonal line of pixels. One of the ordinary skill in the art would have been motivated to do this to adjust the interval between characters on a sub-pixel by sub-pixel basis for characters including a diagonal line of pixels (column 11, lines 52-64).

However, Toji teaches the claim limitation "solely when the area includes a pixel located diagonal to the target pixel, shifting the target pixel by at least one subpixel to generate a shifted target pixel and then expanding the shifted target pixel into subpixel fonts; and when the area

includes no pixel located diagonal to the target pixel, avoiding a shift in the target pixel before expanding the target pixel into subpixel fonts”.

Toji teaches no shifting in Fig. 7(a) and shifting in Fig. 7(c) or 7(f). See also Fig. 14(a) and Fig. 15 wherein shifting occurs for a center target pixel in the second row, and no shifting occurs for a center target pixel in the first row, fourth row. No shifting occurs also for the target pixel located in the second position of the fourth row and the fourth position of the fourth row (Fig. 14(a) and 15). Toji discloses in Fig. 25(c) and 25(d) shifting the target pixel rightward a subpixel and no shifting for the target pixel in Fig. 25(c). Toji discloses in Fig. 11(a) shifting the target pixel leftward or rightward by two sub-pixels. Toji also discloses the gradation adjustment for the pixels (See Toji Paragraph 0012-0014)

Koyama discloses pattern correction using a plurality of patterns including the auxiliary patterns according to the font typefaces and sizes (see e.g., Figs. 55-56 wherein a plurality of patterns are disclosed with each attribute table with respect to the character size and typeface or stroke). It would have been obvious to have modified Koyama's patterns for correcting the subpixel color levels using the pattern matching of finding the correct pattern with respect to the particular font typeface and size. Koyama discloses *using the correction font patterns table to match for a correction font pattern to be used for the bitmap font wherein the correction font pattern identifies a horizontal line, a vertical line or diagonal line of pixels or sub-pixels having a gradation level 3 for example, see Figs. 3, 12, 19-26.*

It would have been obvious to have used any pattern matching technique, if there is a difference at all, from those disclosed in Koyama to control the color gradation levels of the subpixels in which the font bitmap array contains a correction font pattern identifying a

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horizontal line, a vertical line or diagonal line of pixels or sub-pixels having a specific gradation level. It would also have been obvious to have incorporated Toji's teaching of shifting or not shifting into Koyama's font processor because Koyama teaches correction font pattern tables performing shifting the target pixel one or more sub-pixels.

One of the ordinary skill in the art would have been motivated to do this to virtually increase the resolution of the characters being displayed on the display device and parts of a character such as oblique lines or curves can be displayed smooth and thereby significantly improving the character display quality by eliminating jaggy edges associated with the characters (Koyama column 10, lines 1-7 and Okada Figs. 20-27B; column 19-21 and Toji Paragraph 0039).

Re Claims 2-3:

Koyama does not explicitly disclose the term "shifting the subpixels".

However, Koyama discloses pattern correction using a plurality of patterns including the auxiliary patterns according to the font typefaces and sizes (*see e.g., Figs. 55-56 wherein a plurality of patterns are disclosed with each attribute table with respect to the character size and typeface or stroke*). Koyama further discloses setting the color levels for the sub-pixels according to the pattern data and therefore the color levels for the sub-pixels constituting the character increases and the color levels for the sub-pixels constituting the background decreases (Figs. 5-8, 12 and 14). Koyama further discloses the brightness levels are shifted (column 11, lines 25-38) and the brightness table defines the relationship between the color element level of a sub-pixel and the brightness level of the sub-pixel and thereby the brightness levels can be shifted in

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Koyama. Finally, Koyama discloses adjusting the intervals between the characters on a sub-pixel by sub-pixel basis (column 11, lines 52-64) and therefore Koyama suggests the claim limitation of “shifting the subpixels”.

It would have been obvious to have modified Koyama’s shifting the brightness levels of the sub-pixels using the shifting of the subpixel positions or changing the character intervals by shifting the subpixel positions. One of the ordinary skill in the art would have been motivated to do this to adjust the interval between characters on a sub-pixel by sub-pixel basis (column 11, lines 52-64).

Re Claim 4:

Koyama further discloses the subpixel-font generating device placing the subpixels constituting the pixels at positions of the corresponding pixels when the pixels constituting the font data are arranged in a horizontal line or in a vertical line (e.g., column 13, lines 10-32).

Re Claim 5:

Koyama does not explicitly disclose the term “performing the pattern correction using a matching pattern of 3 by 3 pixels”.

However, Koyama discloses pattern correction using a plurality of patterns including the auxiliary patterns according to the font typefaces and sizes (*see e.g., Figs. 55-56 wherein a plurality of patterns are disclosed with each attribute table with respect to the character size and typeface or stroke*). It would have been obvious to have modified Koyama’s patterns for correcting the subpixel color levels using the pattern matching of finding the correct pattern with respect to the particular font typeface and size. It would have been obvious to have used any

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different pattern matching technique from those disclosed in Koyama to control the color gradation levels of the subpixels. One of the ordinary skill in the art would have been motivated to do this to virtually increase the resolution of the characters being displayed on the display device and parts of a character such as oblique lines or curves can be displayed smooth and thereby significantly improving the character display quality (column 10, lines 1-7).

Re Claim 6:

Koyama further discloses detecting edges included in the subpixel fonts wherein the skeleton data 42d defines the skeleton shape of a character according to the character code for identifying the character data indicating the number of strokes included in the character and stroke information for each stroke and the subpixel color element level arrangement of the character is obtained by combining together the respective sub-pixel color element level arrangement for the strokes included in the skeleton data 42d (see column 23, lines 17-28) and therefore the program and data stored in the auxiliary storage device allows an edge detecting to detect edges or skeleton included in the subpixel fonts. Moreover, Koyama discloses that the character display program along with a plurality of pattern fonts stored in the storage apparatus 40 and when executed by the CPU 21, the character font is generated by correcting the color element level of each subpixel and the brightness level of each sub-pixel is transferred to the display device 10; Figs. 52A-67A and the corresponding disclosure regarding these figures. Therefore, Koyama discloses a gradation setting device that sets the color gradation level of the pixels along the edge to an intermediate gradation level.

Re Claim 7:

Koyama further discloses setting the color levels for the sub-pixels according to the pattern data and therefore the color levels for the sub-pixels constituting the character increases and the color levels for the sub-pixels constituting the background decreases (Figs. 5-8, 12 and 14).

Re Claim 8:

Koyama further discloses a storage device that stores font data generated by the font processor (Figs. 15A-15E) and a display unit that displays the font data generated by the font processor (column 13, lines 10-28).

Re Claim 11:

The claim 11 is subject to the same rationale of rejection set forth in the claim 1. Toji's teaching as relevant to the claim invention set forth in the claim 12 is given as follows.

Toji teaches the claim limitation "when a pixel constituting the font data is located at a position that, with respect to a first direction, is diagonal to a target pixel, shifts the sub-pixels of the target pixel in the first direction by at least one sub-pixel distance; and when a pixel constituting the font data is located at a position that, with respect to a second direction opposite to the first direction, is diagonal to the target pixel, shifts the sub-pixels of the target pixel in the second direction by at least one sub-pixel distance".

Toji teaches no shifting in Fig. 7(a) and shifting in Fig. 7(c) or 7(f). See also Fig. 14(a) and Fig. 15 wherein shifting occurs for a center target pixel in the second row leftward or rightward. Toji discloses in Fig. 25(c) and 25(d) shifting the target pixel rightward a subpixel. Toji discloses in Fig. 11(a) shifting the target pixel leftward or rightward

by two sub-pixels. Toji also discloses the gradation adjustment for the pixels (See Paragraph 0012-0014)

Re Claim 12:

The claim 12 is subject to the same rationale of rejection set forth in the claim 1. Toji's teaching as relevant to the claim invention set forth in the claim 12 is given as follows.

Toji teaches the claim limitation "when a pixel constituting the font data is located at a first position that, with respect to a first direction in which subpixels are to be aligned, is adjacent to a target pixel, disposes subpixels at the position of the target pixel without shifting the target pixel" (See the target pixel in Figs. 14(a) and 15 that is located at the center of fifth row receives no shifting).

Toji teaches the claim limitation "when no pixel constituting the font data is located at the first position and also a pixel constituting the font data is located at a second position that, with respect to a second direction orthogonal to the first direction, is adjacent to the target pixel, disposes subpixels at the position of the target pixel without shifting the target pixel" (See Fig. 14(a) and 15 wherein the leftmost pixel on the last row meeting the claim limitation of "the target pixel" in this context, but receives no shifting as claimed).

Toji further teaches the claim limitation "when no pixel constituting the font data is located at the second position and also a pixel is located at a third position that is adjacent and diagonal to the target pixel, shifts the target pixel by at least one sub-pixel distance and then disposes sub-pixels at the position of the target pixel, wherein when the third position where the pixel is located is to one side of the target pixel, the target pixel is shifted in one direction, and

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when the third position where the pixel is located is to another side of the target pixel that is opposite to the one side, the target pixel is shifted in a direction opposite to the one direction (e.g., Toji teaches in Fig. 14(a) and 15 shifting the second pixel in the 3rd row rightward by one sub-pixel and shifting the fourth pixel in the 3rd row leftward by one sub-pixel. It is clear the second pixel in the 3rd row and the fourth pixel in the 3rd row meet the claim limitation of "the target pixel" as claimed).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

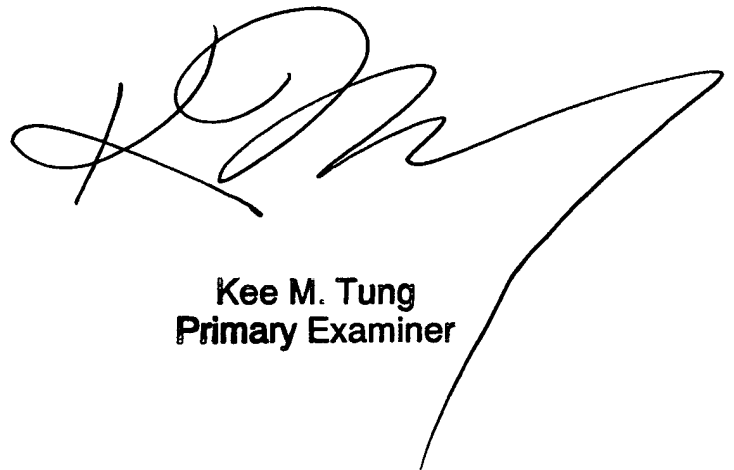
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jin-Cheng Wang whose telephone number is (571) 272-7665. The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung can be reached on (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jcw



Kee M. Tung
Primary Examiner